

RESEARCH ISSUES AND INITIATIVES

NIEHS Funds Human BPA Research

With \$14 million in stimulus funds from the American Recovery and Reinvestment Act, the NIEHS is bolstering a coordinated effort to produce data on bisphenol A (BPA) that will help refine our understanding of whether the general population's current exposures to the chemical pose a health risk. Used in producing plastics, BPA can leach into food and beverages from everyday items such as food storage containers, water bottles, and baby bottles.

The NIEHS has used the stimulus monies to fund 10 two-year studies on the potential contribution of low-dose BPA to problems such as obesity, diabetes, reproductive disorders, asthma, sexually dimorphic behaviors, cardiovascular diseases, and prostate, breast, and uterine cancer. Those grants augment ongoing work on BPA by researchers in the NIEHS Intramural Division and at the National Toxicology Program (NTP).

Many animal studies suggest exposure to low doses of BPA during critical periods of fetal development may result in adverse reproductive, behavioral, and carcinogenic changes over the long term. However, fewer studies have examined whether or how the effects seen in animals translate to humans. In 2008 the U.S. Food and Drug Administration (FDA) declared BPA safe, with an updated ruling pending at press time. But regardless of what the FDA decides at this point, scientists involved in BPA research agree more human data are needed for the compound.

"Policy makers and regulatory agencies such as the FDA are constantly looking at new data, and we're hoping that the data we will provide in the next two years will have a significant impact in helping them [continue to assess] the health effects of this chemical," says Jerry Heindel, a health scientist administrator at the NIEHS.

Coordinating the new effort with research already under way will yield a more comprehensive understanding of BPA while also maximizing resources, says Linda S. Birnbaum, director of the NIEHS and the

NTP. "We saw the stimulus package award as a real opportunity to bring together the ongoing NIEHS work, the NTP work, and these new projects to clearly answer the question of how much of a problem BPA may or may not be," Birnbaum says. In total, including the stimulus funds, the institute will invest approximately \$30 million over two years on BPA-related research.

Many of the awardees met with institute scientists involved in ongoing BPA research in October 2009. "Having the key players talking to one another as they begin new research efforts will stimulate collaboration, create opportunities to share resources, and encourage researchers to develop reliable and reproducible methods that will allow for a comprehensive assessment of the human health effects of BPA," Heindel explained in an NIEHS press release.

The group will continue to meet periodically and share data and tissue samples. For example, one of the new grantees, B. Paige Lawrence, an associate professor at the University of Rochester School of Medicine, is studying whether BPA influences immune-mediated diseases, but some of the data from her study may also provide clues to the chemical's potential role in cancers. "The same types of cells and pathways that fight viral infections also detect and destroy tumor cells," she says.

The new effort is crucial to getting results from human studies quickly, says grantee Kim Harley, an epidemiologist at the University of California, Berkeley, who will study BPA levels and health outcomes in a birth cohort of 300 children followed through age 12. "We haven't focused on BPA before," she says, "but we have this valuable cohort as well as urine samples stored, so with this grant we can measure BPA levels and start to see the effects in children all the way to puberty."

Angela Spivey writes from North Carolina about science, medicine, and higher education. She has written for *EHP* since 2001 and is a member of the National Association of Science Writers.

because of aspirin's link to Reye syndrome. This life-threatening disorder can affect people of all ages, although it is perhaps most notorious for affecting children. Further prospective studies are required to better understand the acetaminophen-asthma connection, and the authors do not recommend abandoning acetaminophen as a treatment for flu symptoms in children.

Sensor for Pesticides in Foods

In the 1 Nov 2009 issue of *Analytical Chemistry*, Zakir Hossain and colleagues describe a new biosensor they have developed that works more quickly and cheaply than conventional methods to detect small amounts of organophosphate and carbamate pesticides in foods and beverages. Conventional methods can take hours to reveal such contaminants, but the new bioactive paper sensor provides results in minutes. The researchers note their method could be especially useful in developing countries, which often lack access to electricity and expensive testing equipment.

The Temperature of Conversion

A new study reveals that most land use changes in the United States lead to local and regional increases in surface temperature, with the greatest increases occurring with urbanization and conversion to bare soil. But Souleymane Fall and colleagues also report that conversion of land to agricultural uses resulted in cooler temperatures even if the land was previously forested, perhaps because of increased evaporation. These findings add to a growing body of knowledge that highlights the necessity of incorporating land use changes into climate change models. The paper appeared online 24 Aug 2009 ahead of print in the *International Journal of Climatology*.

Phones and Bones

In a study of 150 male cell phone users, Tolga Atay and colleagues found that wearing a belt-mounted phone was associated with decreased bone density in the pelvic iliac wing closest to the phone—perhaps, they suggest, due to exposure to electromagnetic fields (EMFs). Although the reduction in bone

density was not statistically significant, the authors note the men in their study were relatively young (21–57 years old). If the reductions resulted from exposure to EMFs from the phones, the effect could grow with continued use. (Conversely, very weak EMFs have been used successfully to stimulate healing in broken bones.) The report appeared in the Sep 2009 issue of *The Journal of Craniofacial Surgery*.

